

Section 2-4: Deductive Reasoning

By the end of this lesson, you should be able to answer:

- How do you use the Law of Detachment?
- How do you use the Law of Syllogism?

Define the following:

1. Deductive Reasoning

2. Valid

3. Law of Detachment

Example:

4. Law of Syllogism

Example:

Example 1: Determine whether each conclusion is based on inductive or deductive reasoning. Explain your choice.

a. In Matt Mitarnowski's town, the month of March had the most rain for the past 6 years. He thinks that March will have the most rain again this year.

b. Maggie Brann learned that if it is cloudy at night it will not be as cold in the morning than if there are no clouds at night. Maggie knows it will be cloudy tonight, so she believes it will not be cold tomorrow morning.

Example 2: Determine whether the conclusion is valid based on the given information. If not, write *invalid*. Explain your reasoning.

Given: If a figure is a right triangle, then it has two acute angles.

Statement: A figure has two acute angles.

Conclusion: The figure is a right triangle.

Example 3: Determine whether the conclusion is valid based on the given information. If not, write *invalid*. Explain your reasoning using a Venn Diagram.

Given: If a figure is a square, it is also a rectangle.

Statement: The figure is a square.

Conclusion: The square is also a rectangle.

Example 4: Draw a valid conclusion from the given statements, if possible. If no valid conclusion can be drawn, write *no conclusion* and explain your reasoning.

Given: An angle bisector divides an angle into two congruent angles. If two angles are congruent, then their measures are equal.

Statement: \overrightarrow{BD} bisects $\angle ABC$.

Conclusion:

Problem Set:

“SUCCESS DOES NOT CONSIST IN NEVER MAKING BLUNDERS, BUT IN NEVER MAKING THE SAME ONE A SECOND TIME.” - JOSH BILLINGS